Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Modification of Parts 2 and 15 of the	)	
Commissions Rules for Unlicensed	)	ET Docket No. 03-201
Devices and Equipment Approval	)	
	)	

Comments of WaveRider Communications Inc.

WaveRider Communications Inc.(WaveRider), a Nevada Corporation, hereby submits these Comments with respect to the Notice of Proposed Rulemaking ("NPRM") issued in the above-captioned proceeding.

I. Introduction

WaveRider is a leading global provider of high-speed fixed wireless Internet access products. The company's Last Mile Solution® products have been deployed by service providers throughout the world as a cost-effective alternative to traditional 'wired' telecommunications networks. The success of WaveRider's Last Mile Solution® product family lies in its quality, speed, ease of deployment and its ability to support a cost-effective business model for all types of operators. In particular, the company's non-line-of-sight (NLOS), self-installable solutions operating in the license-free 902-928 MHz spectrum, are gaining increasing acceptance in the market place. In January 2002, WaveRider's technology, which operates in the 902-928 MHz band, was the recipient of two awards from the Wireless Communications Association. These WCA annual advanced technology or community service awards, known as "The Wemmies, " are

selected by WCA's jury of distinguished carrier or diversified engineering consultants. WaveRider won two awards, one for NLOS performance and another "Plug & Play" capability.

With more than 300 network systems utilizing the 902-928 MHz band installed in the United States supporting thousands of users, WaveRider's Last Mile Solution® products are helping Internet Service Providers, independent telephone companies, municipal governments, utility companies, and other operators to bring immediate broadband access to their region, and realize a rapid return on their investments. WaveRider continues to deploy several systems each month, as service providers strive to meet the need for broadband services in underserved areas.

These networks in the United States, which operate in the 902-928 MHz band utilizing equipment regulated by Part 15 Rules, provide high-speed Internet access to communities, where there is little or no cable modem or DSL service. WaveRider’s fixed wireless solutions in the 902-928 MHz band support a key initiative of the Commission, namely that of providing high-speed Internet services to rural and under served communities. Network operators, utilizing WaveRider’s solution have been able to provide their customers with the type of broadband service usually available only in the larger cities, and they are doing so at an affordable price. They also are providing broadband service to schools, hospitals, and local governments, giving those entities the ability to use broadband to deliver better and more cost-efficient services to their constituents and enhance the quality of life in their communities.

As a leading developer of equipment operating in the 900 MHz unlicensed band, WaveRider has developed considerable expertise in the challenges and opportunities that have been made available through the Part 15 regulations. WaveRider has noted with interest the strong interest by the Commission in modifying the rules, as new applications and technologies develop. We share the concern of the Commission that these changes properly reflect the balance between improving the quality of service that various applications can provide to their respective users, while at the same time keeping strong cognizance of the importance of the shared nature of the unlicensed bands.

WaveRider believes that continued success of the unlicensed bands in meeting the social needs of the country can best be achieved if there are strong regulations that support the industry's adherence to what could be called a "good neighbour" policy. Specifically, the keys to this "good neighbour" policy can be summarized as follows:

1. Services should be provided using as little of the available spectrum as possible
2. Spectrum should only be used when services are actually being delivered
3. Power levels used should be limited to that required to provide the service
4. Regulations should take into account all users of the spectrum
5. Regulations should be enforceable, and crafted such as to make deliberate or inadvertent violations difficult

In the NPRM, the Commission seeks to update its Part 15 rules in a broad range of areas, that generally cover the three unlicensed bands (902-928 MHz, 2.4 GHz, and 5.7

GHz). We are pleased to submit the following comments, occasionally using the good neighbour tenets as a basis.

II Discussion

A. Advanced Antenna Technologies

WaveRider supports the introduction of Advanced Antenna Technologies, as long as the appropriate steps are taken to ensure that the effect is not a net increase in harmful interference. With respect to the specific proposals in the NPRM, we are concerned about the introduction of higher power allocations for the case of a sectored antenna at a central access point. Since a single access point radio typically serves between 125 and 300 users, and there is no restriction on the duty cycle of the transmission as a function of user data needs, the net result will be a significant increase in radiated power from an access point. Three such systems, co-located at a single site to provide 360-degree coverage, would result in a significant increase in the radius of interference, without any apparent real increase in spectrum efficiency.

Since customer premise equipment typically only transmits when the user actually has data to send, it would be reasonable to allow the use of narrow beam or beam forming antenna technologies that would focus the energy in the specific (known) direction of the access point. Since in this case both the geographic spread of the energy is reduced, and there is a natural limit on the duty cycle of the transmissions, we would propose a higher EIRP to be permitted in this case. For 2.4 GHz, the 1:3 backoff rule could be extended, and we would suggest the same rule could be implemented in the 902-928 MHz band with minimal negative impact.

B. Replacement Antennas for Unlicensed Devices

WaveRider supports the certification of unlicensed devices with multiple antenna types, with testing required only on the highest gain antenna of each type that would be permitted.

Coupled with this change should be a review of the need for a proprietary connector. While WaveRider supports the intent of this requirements, it is not clear that the current rules achieve the objective of preventing unauthorized antennas from being installed, either because the non-standard connectors are quickly copied and made generally available to the user community, or through the circumvention of the requirement by, seemingly often trivialised, declarations of a need for a "professional installer". Unless there is a renewed emphasis on enforcement of the bypassing of the intent of this rule in the field, it seems an unnecessary expense for the industry.

C. Flexible Equipment Authorization for Radio Transmission Systems

WaveRider does not support the proposal to allow the substitution, or addition, of non-system certified amplifiers to field systems. For several reasons, we do not believe that it is feasible to properly identify "technical equivalency" for the broad range of modulation types currently permitted. Specific issues that we bring to your attention are:

- Most field personnel focus on achieving as large an output power as possible, subject to the 1-watt modem limit. This focus ignores the fact that many modems in the market are output limited to less than 1 watt by their power spectral density

limit (8 dBm per 3 KHz for 900 and 2.4 GHz). It should be noted that this limitation is rarely made known in the user or installation documentation, and so is not available to a field installer. Allowing such amplifiers would negate the intent of this power spectral density limit.

- Our experience using constant envelope modulation systems with “after market” amplifiers that are designed to limit the output power to 1 watt, shows that while they may be effective in amplifying the main signal lobe to the 1 watt level, and thus may comply with the 1 watt output rule, they also amplify the signal sidelobes to the extent that the relative energy in the sidelobes is significantly increased. Even if the effect does not violate any of the emission limitations, this does increase the interference levels in the transmitter region, violating rule1 of a good neighbour policy.

- With the advent of non-constant envelope modulations now permitted under 15.247, it is not at all clear that generic amplifiers can be manufactured that can guarantee not to cause significant spectral re-growth, and/or changes in the spectrum, such as to change the basis for the power spectral density limitations determined during the certification of the original modem. Since these types of measurements are very difficult to perform in a non-calibrated environment, there is a high probability of non-conforming installations resulting in the field. Obviously, for the same reasons, control and enforcement would be very difficult.

- In an integrated design, power amplifier and modulation turn on control

signals are carefully timed to avoid transient transmit power peaks due to overshoot. In our experience, such turn on transients can dominate peak spectral density measurements. Such control signals are not available with an external amplifier.

These issues are significant, and it is very difficult to identify the cause, or mitigate the effect through field measurements. Allowing such external amplifiers poses a major risk to successful sharing of the unlicensed bands.

D. Measurement Procedures for Digital Modulation Systems

WaveRider notes the Commission's observations with respect to the differences between 15.247 (8 dBm per 3 kHz) and U-NII (17 dBm in 1 MHz) regulations regarding power spectral density limits. While these differences may seem somewhat illogical in the context presented, we point out that while the impact of changing the rules to be consistent with the U-NII definition may be relatively small for wide bandwidth applications (>10 MHz), for applications using smaller bandwidths the effect would be a significant reduction in allowed operating power. This would have a large negative impact on our ability to serve our customers, since such large bandwidths are not practical in the 900 MHz band. This same impact would be felt by other manufacturers in similar and different applications that use narrower band modulations than, say, 802.11a and 802.11g.

III Response to Previous Comments

A. ITRON, INC

Itron Inc has previously submitted a Comment to this NPRM, dated January 23, 2004. WaveRider would like to comment on their submission.

In October 2002, Itron contacted WaveRider expressing concern that in certain communities their meter reading systems were being negatively impacted by operators using WaveRider equipment. As described in the Itron submission, Itron equipment operates under the low power rules of Part 15 (15.249. 15.231). The coexistence of such low power equipment operated in a wide-area, outdoor application with a 15.247 system covering the same area did seem problematic. Nonetheless, under our good neighbour policy we worked diligently with Itron to address the issue. The key enabling factors were determined to be that the Itron system was characterised by extremely low duty cycle, and with proper attention we were able to ensure that windows of opportunity were always present through our system operation. After significant investment of development and testing, including providing a lab system for Itron's engineers to verify, we were able to resolve the identified problems. This change to our system function has been incorporated into every installation, and fully satisfies the operational needs of Itron's customers.

With respect to Itron's specific proposal (Appendix A of their submission), we respectively submit that this proposal by itself would not have addressed the field problem we worked on with them. Since such a change would significantly impact our customers operations and would not have alleviated the field problem encountered in this case by Itron's operators, we would ask that it not be considered for implementation.

We do, however, recognize the concerns of Itron and other low power users of the 900 MHz and 2.4 GHz unlicensed bands, and trust that the Commission will continue to take due regard for the impact of proposed changes, often geared towards high power users, on other established users of the unlicensed bands.

Respectfully submitted,

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